BRARY
STATE PLANT BOARD

CIRCULAR NO 146.

Issued February 12, 1912.

United States Department of Agriculture,

BUREAU OF ENTOMOLOGY.

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THE MOVEMENT OF THE MEXICAN COTTON BOLL WEEVIL IN 1911.

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During the season of 1911 the boll weevil was greatly reduced in numbers throughout its entire range. This resulted from a combination of climatic influences extending over a period of about three years. So unfavorable were the conditions that the insect was exterminated in an area covering about 23,000 square miles in the northwestern portion of Texas and the western portion of Oklahoma. Undoubtedly these conditions had an important bearing on the production of the large crop of 1911.

The unfavorable conditions for the weevil which culminated in 1911 began in 1909. In that year drought occurred in Texas and Louisiana at such a time as to check the development of the immature stages. In 1910 equally adverse conditions prevailed, and the pest was further reduced in numbers. At the end of the season of 1910 conditions arose which gave the insect another very important setback. This was a killing frost which occurred October 29. The weevils were deprived of their food in all parts of the infested territory except along the Gulf Coast and in a few isolated localities elsewhere. The freeze destroyed outright enormous numbers of the weevils which were found in the bolls and squares, but the conditions immediately following the freeze were even more important in reducing the infestation to a very low point. After the freeze of October 29 the weather became warm, and this induced activity on the part of the weevils that survived. In fact, temperatures occurred for several weeks which caused the insects to require food. An active search for food began, but as the cotton had all been killed the majority of the weevils which had survived the freeze could find no food and perished.

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The general effect of the cold of October 29 is shown by a study of the conditions in certain localities which were exempt from freezing temperatures. In several counties in the vicinity of Cisco, Tex., for some unexplained reason, the first killing frost in 1910 did not occur until November 29. At this time most of the weevils were in hibernating quarters. As a result, in 1911, it was found that in the vicinity of Brownwood there was an area in which the weevils were numerous and in which considerable damage was done. This area corresponded exactly with the area in which the freeze of October 29 was not experienced.

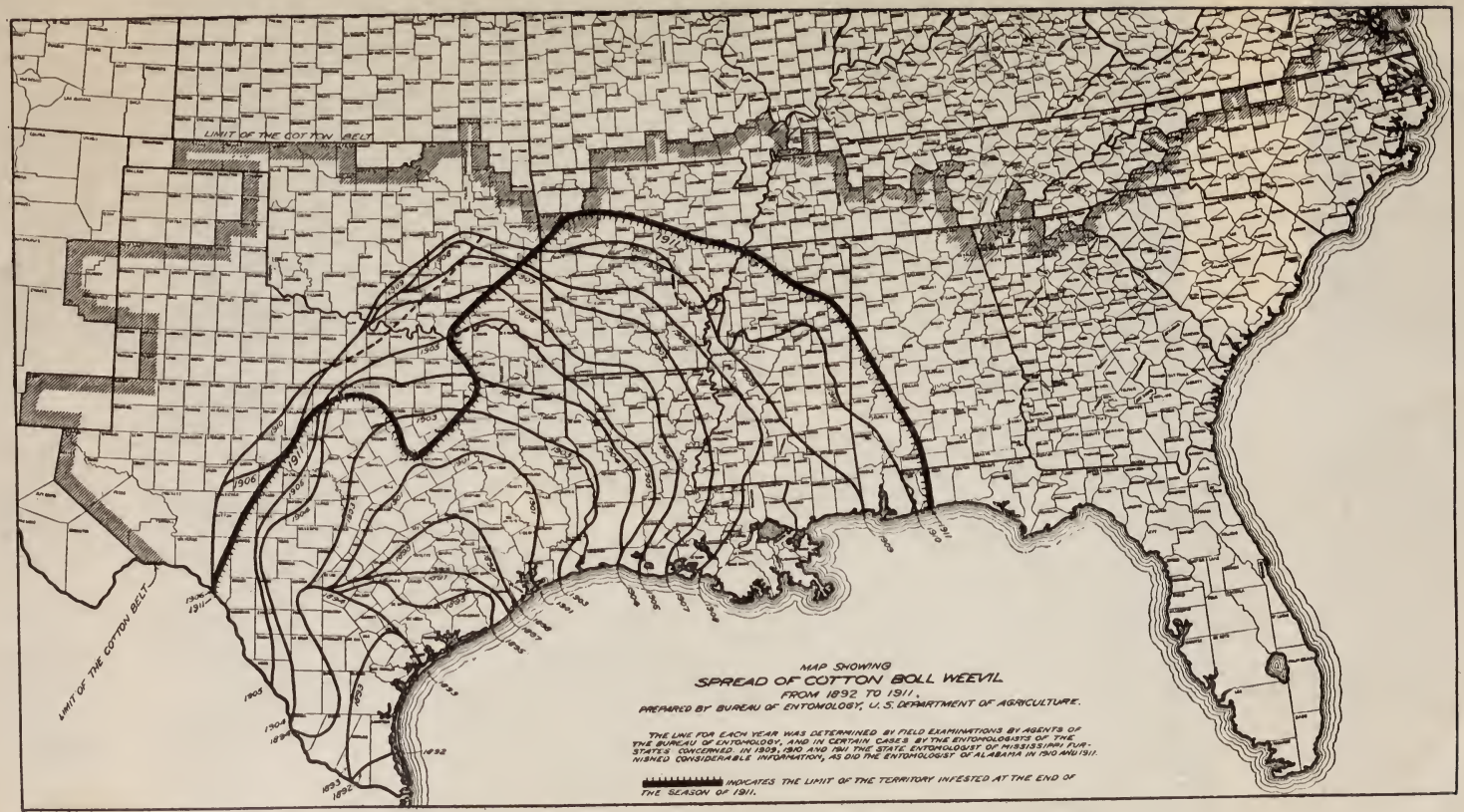
The great reduction in the number of weevils which succeeded in passing the winter of 1910–11 is shown by hibernation experiments which were conducted at Tallulah, La. At this place it is determined that one-half of 1 per cent of the weevils which entered hibernation emerged in the spring of 1911. In favorable seasons as high as 12 per cent have survived in that locality and, in fact, the average survival during seven different seasons in seven widely separated localities in Texas and Louisiana has been 7 per cent.

The region in which the boll weevil became exterminated in 1911 is the one in which the conditions of drought were most intense in 1909 and 1910 and in which at the same time the conditions for hibernation are less favorable than in other parts of the cotton belt. The territory where the loss occurred consists generally of open country in which but little timber is to be found.

Notwithstanding the great reduction in the numbers of the boll weevils in the United States in 1911 considerable advance was made to the east and north when the dispersion movement began in August. The explanation of this lies in the outbreak of the cotton caterpillar, which defoliated practically all of the fields throughout the infested area at about the time the dispersion movement was beginning. The weevils started on their dispersion flight, encountered fields which had been stripped by the leaf worm, and continued their flight indefinitely. If the fields just beyond the border of the previously infested territory had not been defoliated the weevils would have stopped and the total area covered would have been much less.

This extensive dispersion of the insect caused it to regain much of the territory it had lost in Texas and Oklahoma, and Florida became invaded for the first time. (See map, fig. 1.)

The reasons for the great scarcity of weevils in 1911 are plain. The reduction was due to a combination of climatic influences which can only be expected to recur at very infrequent intervals. With the return of seasons favorable to it the boll weevil will undoubtedly regain all of the lost territory and multiply to the same extent as it has in the past. It must not be supposed from the situa-


LIMIT OF THE COTTON BELT
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MAP SHOWING
SPREAD OF COTTON BOLL WEEVIL
FROM 1892 TO 1911.
PREPARED BY BUREAU OF ENTOMOLOGY, U. S. DEPARTMENT OF AGRICULTURE.
THE LINE FOR EACH YEAR WAS DETERMINED BY FIELD EXAMINATIONS BY AGENTS OF THE BUREAU OF ENTOMOLOGY, AND IN CERTAIN CASES BY THE ENTOMOLOGISTS OF THE STATES CONCERNED. IN 1909, 1910 AND 1911 THE STATE ENTOMOLOGIST OF MISSISSIPPI FURNISHED CONSIDERABLE INFORMATION, AS DID THE ENTOMOLOGIST OF ALABAMA IN 1910 AND 1911.
INDICATES THE LIMIT OF THE TERRITORY INFESTED AT THE END OF THE SEASON OF 1911.

FIG. 1.—The spread of the cotton boll weevil from 1892 to 1911. (Original.)

tion in 1911 that there is any hope whatever for a permanent reduction in the importance of the boll weevil. On the contrary, it is necessary for planters to continue their fight against the pest according to the plans that have been detailed in the publications of the Department of Agriculture.

Approved:

JAMES WILSON,
Secretary of Agriculture.

WASHINGTON, D. C., *January 3, 1912.*

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